

**VALERIE J. HARWOOD
CURRICULUM VITAE: 2009**

University of South Florida
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EDUCATION

1992 **Ph.D.** in Biomedical Sciences. Old Dominion University and Eastern Virginia Medical School.
1983 **B.A.** in Biology. State University of New York at Plattsburgh
1980 **B.A.** in French. Iowa State University

ACADEMIC POSITIONS

2004- Associate Professor, University of South Florida Department of Biology
1998 - 2004 Assistant Professor, University of South Florida Department of Biology
1995 - 1998 Assistant Professor: University of North Florida Dept. Natural Sciences
1992 - 1995 Postdoctoral: University of Maryland Center of Marine Biotechnology

CONSULTING and INDUSTRY POSITIONS

2007 Microbiology (MST) consultant: Cawthron Institute, New Zealand
2004 – current Microbiology (MST) consultant: Motley-Rice, LLC
1990 - 1991 Microbiology Consultant: Environmental Testing Services, Norfolk, VA
1987 - 1992 Microbiology Consultant: Jennings Laboratory, Norfolk, VA
1986 - 1987 Microbiologist: Jennings Laboratory, Norfolk, VA

HONORS and SCHOLARSHIPS (Recent)

2005 & 2006 Phi Kappa Phi Honor Society Scholar Award
2004 Phi Sigma Iota Honor Society
2005-2006 President, Southeastern Branch American Society for Microbiology.
2003 Margaret Green Outstanding Teaching Award: Southeastern Branch American Society for Microbiology

PROFESSIONAL ORGANIZATIONS

2004- International Water Association
2004- Phi Sigma Iota Honor Society
1999 - American Water Resource Association
1995 - Council on Undergraduate Research
1989 - Sigma Xi Scientific Honor Society
1989 - American Society for Microbiology



FUNDING: AS PRINCIPLE INVESTIGATOR (since 2003)

- 2009-2012 Determining the Relationship of Microbial Pollution and Associated Health Risks at Freshwater and Saltwater Beaches of Florida. Florida Department of Environmental Protection and the Water Environment Research Foundation. **\$403,000.**
- 2008-2009. Lower St. Johns River Tributary Assessment. Florida Department of Environmental Protection.. **\$141,637.**
- 2007-2010. Validation and Field Testing of Microbial Source Tracking Methodologies in the Gulf of Mexico US Environmental Protection Agency (Gulf of Mexico Program). **\$444,000 to Harwood; \$875,907 total** with Co-PIs at UWF & USM
- 2007-2008. Rapid concentration and quantification of bacteria and viruses from marine waters. NOAA-CICEET **\$68,974 to Harwood; \$145,893 total** with Co-PI D.V. Lim at USF
- 2007-2008 Fecal BMAP Hillsborough River Phase II, Level 1. Florida Department of Environmental Protection **\$111,000.**
- 2007-2008. Identification of Major Sources of Bacterial Loading to Deep Creek and the Northern Coastal Basin. St. Johns River Water Management District. **\$40,000.**
2007. Further Investigation of the Sources of Fecal Indicator Bacteria in Wakulla County, Florida. Florida Department of Health. **\$77,931**
- 2006-2007. Analysis of Sources of Fecal Indicator Bacteria Causing Beach Closures in Hillsborough County, Florida. Environmental Protection Commission of Hillsborough County. **\$125,000.**
- 2006-2007. Identification of Major Sources of Bacterial Loading to the Shellfish Harvesting Waters in the Northern Coastal Basin. St. Johns River Water Management District. **\$40,000.**
- 2005-2006. JEA Tributary Pollution Assessment. Jacksonville Electrical Authority. **\$46,240.**
- 2004-2005. Identification of the Sources of Fecal Indicator Bacteria in Wakulla County, Florida: A Research Proposal. Florida Dept. Environmental Protection. **\$70,140.**
- 2004-2005. Microbial Source Tracking: Tools for Refining Total Maximum Daily Load Assessments. Florida Dept. Environmental Protection. **\$295,500 (\$156,000 to Harwood).**
- 2004-2005. Sarasota County, FL. Siesta Key Beach Water Quality Sampling to Determine Sources of Fecal Indicator Bacteria. **\$14,000.**
2004. Long-lasting Effects of a Sewage Spill in McKay Creek & Implications for Human Health. Pinellas County Utilities. **\$30,600.**
- 2003-2004. Bacteria in Urban Tributaries of the St. Johns River, Jacksonville Florida. Florida Department of Environmental Protection. **\$100,000.**
- 2001-2004. The Use of an Automated Ribotyping Assay for Identification and Source Tracking of Microbial Water Quality Indicators. US Environmental Protection Agency. **\$110,000.**
- 2001-2004. Bacterial Source Tracking Methods to Identify Nonpoint Fecal Pollution in Agricultural Watersheds. US Department of Agriculture. Co-PIs: Bruce Wiggins (James Madison University) and Charles Hagedorn (Virginia Tech). **\$310,000.**

- 2001-2004. Understanding the Sources and Fate of Conventional and Alternative Indicator Organisms in Subtropical Waters. US Environmental Protection Agency. **\$388,000**
- 2001-2003. Determination of the Sources of Fecal Pollution to Orange County, California by Antibiotic Resistance Analysis and Ribotyping. Orange County, Cal. Health Agency. **\$131,000.**
- 2001-2003. Real-Time Detection of Human Pathogens and Identification of the Sources of Indicator Bacteria in the Guana-Tolomato-Matanzas National Estuarine Research Reserve. Cooperative Institute for Coastal and Estuarine Environmental Technology. Co-PI: Daniel V. Lim (USF). **\$198,400.**

FUNDING: AS CO-PRINCIPLE INVESTIGATOR (since 2003)

(Only funds allocated to Harwood are listed.)

- 2008-2011. Predicting the effects of agricultural practices on waterborne human pathogens, livestock helminthes, and the health of rural water-bodies. USDA. Project role: co-P.I. with Jason Rohr. \$398,500.
- 2006-2007. P.I.: A.D. Levine. Development of a Guidance Document for Applying Sound Statistics for Exploring, Interpreting, and Presenting Microbiological Data Associated with Reclaimed Water Systems, Project role: co-PI with A.D. Levine, Civil & Environmental Engineering. \$43792 to Harwood.
- 2005-2006. PI: A.D. Levine. Development of Management Tools for Control of Deposits In Landfill Leachate Drainage Systems. Florida Center for Solid and Hazardous Waste Management. \$10,000 (and **1 Biology Ph.D.** student supported through Engineering)
- 2003-2005. PI: Anita Wright. Improved Methods for Molecular Detection of *Vibrio vulnificus*. National Sea Grant. **\$40,000.**
- 2003-2004. PI: Audrey Levine. Assessment of Biogeochemical Deposits in Landfill Leachate Drainage Systems. Florida Center for Solid and Hazardous Waste Management. **\$30,000.**
- 2002-2003. PI: Andrew C. Cannons. A DNA-based, Fiber Optic Biosensor for the Detection of Bacterial and Protozoan Pathogens. Water Environment Research Foundation. **\$98,000.**
- 2001-2004. PI: Joan B. Rose. Reduction of Pathogens, Indicator Bacteria and Alternative Indicators by Wastewater Treatment and Reclamation Processes. Water Environment Research Foundation. **\$42,100.**

GRANTS PENDING FUNDING

N/A

REFEREED PUBLICATIONS (selected; out of 35 total)

(Students and postdocs supervised by Harwood are bolded; ^a denotes corresponding author)

2009. V. J. Harwood, M. Brownell, S. Wang, J. Lepo, R.D. Ellender, A. Ajidahun, K. N. Hellein, E. Kennedy, X. Ye and C. Flood. Validation and field testing of library-independent microbial source tracking methods in the Gulf of Mexico. Water Research. Accepted pending minor revision.

2009. **A. Korajkic**, B.A. Badgley, M. Brownell, V.J. Harwood. Application of microbial source tracking methods in a Gulf of Mexico field setting. *J. Appl. Microbiol.* Epub ahead of press.
2009. **S.M. McQuaig**, T.M. Scott, J.O. Lukasik and V.J. Harwood. Development and validation of a sensitive Taqman® quantitative PCR assay for the specific detection and quantification of two human polyomaviruses (JCV and BKV) in fecal waste. *Appl. Environ Microbiol.* Epub ahead of press.
2009. **B. Nayak**, A.D. Levine, A. Cardoso and V.J. Harwood. Microbial population dynamics in solid waste bioreactors. *J. Appl. Microbiol.* In Press.
2009. S. Leskinen, V.J. Harwood and D.V. Lim. Rapid dead-end ultrafiltration concentration and biosensor detection of enterococci from beach waters of Southern California. *J. Water Health.* In Press.
2009. A. Tatavarthy, K. Peak, W. Veguilla, T. Cutting, V.J. Harwood, J. Roberts, P. Amuso, J. Cattani, and A. Cannons. An accelerated method for isolation of *Salmonella enterica* serotype Typhimurium from artificially contaminated foods, using a short preenrichment, immunomagnetic separation, and xylose-lysine-desoxycholate agar (6IX Method). *J. Food Protect.* 72:583-590.
2008. **K. V. Gordon**, M. C. Vickery, A. DePaola, **C. Staley** and Valerie J. Harwood^a. Real-time PCR assays for quantification and differentiation of *V. vulnificus* strains in oysters and water. *Appl. Env. Microbiol.* 74:74:74:1704-1709
2008. A.D. Levine, V.J. Harwood, S. Farrah, T.M. Scott, and J.B. Rose. Pathogen and indicator organism reduction through secondary effluent filtration: Implications for reclaimed water production. *Water Environment Research*: 80:596-608.
2007. **Brownell, M.B.**, V.J. Harwood^a, R.C. Kurz, **S.M. McQuaig**, J. Lukasik, and T.M. Scott. Confirmation of putative stormwater impact on water quality at a Florida beach by microbial source tracking methods and structure of indicator organism populations. *Water Research.* 41:3747-3757.
2007. Stoeckel, D.M. and V.J. Harwood^a. Performance, design, and analysis in microbial source tracking studies. *Appl. Environ. Microbiol.* 73:2405-2415.
2006. **Shannon M. McQuaig**, Troy M. Scott, Valerie J. Harwood^a, Samuel R. Farrah and Jerzy O. Lukasik. Novel method for the detection of human derived fecal pollution in environmental waters using a PCR based human polyomavirus assay. *App. Environ. Microbiol.* 72: 7567-7564.
2006. **M. A. Anderson**, J.E. Whitlock and V.J. Harwood^a. Diversity and Distribution of *Escherichia coli* Genotypes and Antibiotic-Resistant Phenotypes in Feces of Humans, Cattle and Horses *Appl. Environ Microbiol.* 72: 6914-6922.
2006. M. Chatzidaki-Livanis, M. A. Hubbard, **K.V. Gordon**, V. J. Harwood, and A.C. Wright. Genetic distinctions among clinical and environmental strains of *Vibrio vulnificus*. *Appl. Environ. Microbiol.* 72:6136-6141.
2006. A Cardoso, A.D. Levine, **B.S. Nayak** and V.J. Harwood. Lysimeter comparison of the role of waste characteristics in the formation of mineral deposits in leachate drainage systems. *Waste Management Res.* 24:560-572.

2005. **K.L. (Hood) Anderson**, J.E. Whitlock and V.J. Harwood^a. Persistence and differential survival of fecal indicator bacteria in subtropical waters and sediments. *Appl. Environ. Microbiol.* 71: 3041-3048.
2005. V. J. Harwood^a, A. D. Levine, T. M. Scott, **V. Chivukula**, J. Lukasik, S.R. Farrah and J.B. Rose. Validity of the indicator organism paradigm: pathogen reduction and public health protection in reclaimed water. *Appl. Environ. Microbiol.* 71: 3163-3170.
2005. D. F. Moore, V. J. Harwood^a, D. M. Ferguson, J. Lukasik, P. Hannah, M. Getrich and **M. Brownell**. Evaluation of antibiotic resistance analysis and ribotyping for identification of fecal pollution sources in an urban watershed. *J. Appl. Microbiol.* 99: 618-628.
2005. **S.D. Shehane**, V.J. Harwood, J.E. Whitlock and J.B. Rose. The influence of rainfall on the incidence of microbial fecal indicators and the dominant sources of fecal pollution in a Florida river. *J. Appl. Microbiol.* 98:1127-1136.
- 2000 V. J. Harwood^a, J. Whitlock and **V. H. Withington**. Classification of the antibiotic resistance patterns of indicator bacteria by discriminant analysis: use in predicting the source of fecal contamination in subtropical Florida waters. *Appl. Environ Microbiol.* 66: 3698-3704.

BOOK CHAPTERS

2007. V.J. Harwood. Assumptions and limitations of microbial source tracking methods. *In: J. Santo-Domingo and M. Sadowsky. Microbial Source Tracking. ASM Press, Washington, D.C.*
2004. A.D. Levine, V.J. Harwood, T.M. Scott and J.B. Rose. Factors influencing removal of bacteria, viruses and protozoan pathogens from wastewater for water reuse applications. *In: HH. Hahn, E. Hoffmann, H. Odegaard. Chemical Water and Wastewater Treatment VII. IWA Publishing.*

PEER-REVIEWED, PUBLISHED REPORTS

2005. J.B. Rose, S.R. Farrah, V.J. Harwood, A.D. Levine, J. Lukasik, P. Menendez and T.M. Scott. Reduction of pathogens, indicator bacteria and alternative indicators by wastewater treatment and reclamation processes. Report 00-PUM-2T. Water Environment Research Foundation, Alexandria, VA.
2004. A.C. Cannons and V.J. Harwood. Sensor technology for water quality monitoring: fiber optic biosensor. Report 2004-07-31. Water Environment Research Foundation, Alexandria, VA.

MANUSCRIPTS SUBMITTED

2009. **B.A. Badgley** and V.J. Harwood^a. The Effects of Submerged Aquatic Vegetation on the Persistence of Environmental Populations of *Enterococcus* spp. in Outdoor Mesocosms Submitted to Environmental Microbiology.

NONREFEREED PUBLICATIONS INCLUDING PROCEEDINGS AND PUBLISHED REPORTS (since 2003)

2008. Cheryl M. Wapnick, Valerie J. Harwood, **Chris Staley**, and Thomas Singleton. A Cost-Effective Method for Assessing Fecal Contamination in Florida Tributaries. Stormcon '08 Conference, Aug 3-8 2007, Orlando FL. Forester Press, Santa Barbara, CA.
2007. C.M. Wapnick, **A. Korajkic** and V.J. Harwood. Application of Microbial Source Tracking (MST) Methods in Assessment of the Sources of Fecal Pollution in Tributaries 9th Biennial Conference on Stormwater Research and Watershed Management, May 2-3, 2007 Orlando, FL. Published online:
<http://www.stormwater.ucf.edu/conferences/9thstormwaterCD/documents/ApplicationsandDevelopment.pdf>
2007. T. Younos, J. Falkinham and V.J. Harwood. Pathogens in Natural and Engineered Water Systems: Emerging Issues. Water Resources IMPACT 9:11-14.
2005. V.J. Harwood, T. Edge, D. Stoeckel, M. Molina and M. Jenkins. Assumptions and limitations of MST methods. *In* USEPA Guide Document on Microbial Source Tracking. United States Environmental Protection Agency, Cincinnati, OH. EPA/600/R-05/064
2005. V.J. Harwood and D.V. Lim. Real-Time Detection of Human Pathogens in the Guana-Tolamato-Matanzas National Estuarine Research Reserve. NOAA/UNH Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET).
2003. A.D. Levine, T.M. Scott, V.J. Harwood and J.B. Rose. Keeping the bugs at bay. Water Environ. Technol. 15:63-66.

ABSTRACTS and RESEARCH PRESENTATIONS SINCE 2005

(Students and postdocs supervised by Harwood are bolded)

2009. **A. Korajkic** and V.J. Harwood. Pathogen Analysis and Microbial Source Tracking at Tampa Bay Beaches. American Society for Microbiology General Meeting, May 17-21, Philadelphia, PA.
2009. **B.D. Badgley** and V.J. Harwood. Investigating the Importance of Sediment and Submerged Aquatic Vegetation as Environmental Reservoirs for Water Quality Indicator Bacteria. American Society for Microbiology General Meeting, May 17-21, Philadelphia, PA.
2009. **C. Staley, J. Fowler** and V.J. Harwood. Analysis of the Distribution of Putative Virulence Markers and Virulence Factors in *Vibrio vulnificus* Strains. American Society for Microbiology General Meeting, May 17-21, Philadelphia, PA.
2008. **S. M. McQuaig**, T. M. Scott, J. O. Lukasik and V. J. Harwood. Development and validation of a sensitive Taqman® real time PCR assay for the quantification of two human polyomaviruses (JCV and BKV) in human-associated waste samples. American Society for Microbiology General Meeting, June 1-5, Boston, Mass.

2008. **C. Staley** and V. J. Harwood. A conserved hypothetical protein may aid in typing *Vibrio vulnificus*. American Society for Microbiology General Meeting, June 1-5, Boston, Mass.
2008. **A. Korajkic** and V.J. Harwood. Pathogen Analysis and Microbial Source Tracking at Tampa Bay Beaches. Southeastern Branch meeting of the American Society for Microbiology, Nov 6-8, Jacksonville, FL
2008. **A. Korajkic, B. Badgley, P. Lazaraevitch** and V.J. Harwood. Application of library-independent microbial source tracking in a Gulf of Mexico field setting. American Society for Microbiology General Meeting, June 1-5, Boston, Mass.
2008. **P. Koch** and V.J. Harwood. Determination of differential survival of *Escherichia coli* and *Enterococcus* spp. strains under hydrodynamically active conditions using BOX-PCR typing. American Society for Microbiology General Meeting, June 1-5, Boston, Mass.
2008. **B.D. Badgley** and V.J. Harwood. The importance of submerged aquatic vegetation as a potential habitat for persistent *Enterococcus spp.* in a subtropical watershed. American Society for Microbiology General Meeting, Boston Mass. June 1-5.
2008. M. Kirs, V.J. Harwood, A.E. Fidler, C.D. Cornelisen, P.A. Gillespie and W.R. Fyfe. Evaluation of library independent microbial source tracking markers in New Zealand. American Society for Microbiology General Meeting, Boston Mass. June 1-5.
2008. A. Abdelzaher, M. Wright, H. Solo-Gabriele, S. Elmir, P. Shih, X. Newman, G. Miller, C. Sinigalliano, M. Gidley, D. Wanless, T. Scott, G. Lucasik, V. Harwood, S. McQuaig, T. Bonilla, F. Bonilla, C. Palmer, L. Plano, L. Fleming. American Society for Microbiology General Meeting, June 1-5, Boston, Mass.
2008. T.W. Macbeth, J.L. Weidhaas, R.L. Olsen, K.S. Sorenson, and V.J. Harwood. Identification and Validation of a Novel Poultry Litter Biomarker for Tracking Fecal Pollution. American Society for Microbiology General Meeting, June 1-5, Boston, Mass.
2008. M.J. Brownell, Cindy Morris, and V. J. Harwood. Determination of Sources of Fecal Indicator Bacteria Causing Beach Advisories in Hillsborough County, Florida. First Annual Monitoring Forum, Gulf of Mexico Alliance. St. Petersburg, FL, June 3-5.
2008. M. Kirs, V. J. Harwood, P. A. Gillespie, A. E. Fidler and C. D. Cornelisen. Application of microbial source tracking (MST) technologies for identifying the source of microbial contamination in the lower Maitai River (Nelson City) and Little Sydney Stream (Tasman District) New Zealand Water and Wastes Association, Christchurch, New Zealand Sept 24-26, 2008.
2007. **S. McQuaig**, T.M. Scott and V.J. Harwood. Blinded Evaluation of Alternative Indicator Methods for use in an Epidemiology Study at Doheny Beach, California. Southeastern Branch ASM Annual Meeting, Auburn AL Nov 8-10.
2007. **P. Koch** and V.J. Harwood. Comparison of DNA Purification Methods for Differentiation of *Escherichia coli* Strains Using rep-PCR Southeastern Branch ASM Annual Meeting, Auburn AL Nov 8-10.
2007. **B. Badgley** and V.J. Harwood. The effects of submerged aquatic vegetation and temperature on the survival of enterocci bacteria in controlled mesocosms. Southeastern Branch ASM Annual Meeting, Auburn AL Nov 8-10.

2007. C. Staley, C.M. Wapnick and V.J. Harwood. Use of Indicator Organisms and Microbial Source Tracking to Identify Sources of Water Contamination. Southeast Stormwater Association Annual Fall Conference, Oct 24-26, Nashville TN.
2007. **C. Staley** and V.J. Harwood. Characterization of a Putative Virulence Marker in *Vibrio vulnificus* Unique to Clinically-Associated Strains. American Society for Microbiology General Meeting, May 20-24, Toronto, Canada.
2007. **P.W. Koch** and V.J. Harwood. Decay Rates of Indicator Organisms in a Hydrodynamically Active Flume System. American Society for Microbiology General Meeting, May 20-24, Toronto, Canada.
2007. A. Korajkic and V.J. Harwood. Survival of the Fittest: Proliferation of *Escherichia coli* Strains in Secondary Habitats. American Society for Microbiology General Meeting, May 20-24, Toronto, Canada.
2007. S.M. McQuaig, M.B. Brownell and V.J. Harwood. Application of Microbial Source Tracking Methods for Human-Associated Sewage at Sites Suspected of Contamination by Compromised Wastewater Handling Systems. American Society for Microbiology General Meeting, May 20-24, Toronto, Canada.
2007. Cheryl M. Wapnick, Valerie J. Harwood, Asja Korajkic and Donald R. Deis. A Guide for Assessing Fecal Contamination in Northeast Florida Tributaries. Southeast Stormwater Association Fall Meeting, Oct 24-26, Nashville, TN
2006. C. Staley and V.J. Harwood. Characterization of a Putative Virulence Marker in *Vibrio vulnificus* Unique to Clinically-Associated Strains. Southeastern Branch ASM Nov 2-4 Atlanta GA
2006. **B.S. Nayak**, A.D. Levine, **E. Goh** and V.J. Harwood. Microbial Population Development in Landfill Leachate Lysimeters in the Presence or Absence of Biosolids Southeastern Branch ASM Nov 2-4 Atlanta GA
2006. **S.M. McQuaig**, **M.B. Brownell** and V.J. Harwood. Microbial source tracking case studies: indicator organism concentrations and human associated markers of fecal pollution at sites suspected of point source contamination Southeastern Branch ASM Nov 2-4 Atlanta GA
2006. **K.V. Gordon** and V.J. Harwood. 16S rRNA-Based Typing of Clinical *Vibrio vulnificus* Isolates with two Real-Time PCR Assays. Southeastern Branch ASM Nov 2-4 Atlanta GA
2006. **C. Staley** and V.J. Harwood. *Vibrio vulnificus* Population Distribution in Oyster Tissues Using BOX-PCR. American Society for Microbiology General Meeting, May 21-25, Orlando, FL.
2006. **A. Korajkic**, **M. Brownell** and V.J. Harwood. Library-based and Nonlibrary-based Methods of Microbial Source Tracking to Determine Pollution Sources in a Rural Florida County. American Society for Microbiology General Meeting, May 21-25, Orlando, FL.
2005. V.J. Harwood and **K.V. Gordon**. Real time PCR applications for water quality testing of pathogens and indicators organisms. 50th Annual Atlantic Fisheries Technology Conference, Norfolk, VA, Nov 6-9.
2005. V.J. Harwood. Microbial source tracking: Assumptions, limitations and future prospects.

2nd Annual Sustainable Beaches Conference, St. Petersburg, FL, Oct 31-Nov 2.

2005. V. J. Harwood, **S.D. Shehane**, **M. Brownell** and T. Scott. . Microbial Source Tracking: A polyphasic approach in three Florida waters. 2nd Annual Sustainable Beaches Conference, St. Petersburg, FL, Oct 31-Nov 2.
2005. **K.V. Gordon** and Valerie J. Harwood. Virulence analysis of *Vibrio vulnificus* using a SYBR Green mediated real-time PCR assay. Southeastern Branch American Society for Microbiology, St. Pete Beach, FL, Oct 27-29.
2005. **A. Korajkic**, **M.J. Brownell**, and V.J. Harwood. Library-based and nonlibrary-based methods of microbial source tracking to determine pollution sources in a rural Florida county. Southeastern Branch American Society for Microbiology, St. Pete Beach, FL, Oct 27-29.
2005. **C.M. Staley** and V.J. Harwood. Analysis of *Vibrio vulnificus* populations in oyster tissues using BOX-PCR. Southeastern Branch American Society for Microbiology, St. Pete Beach, FL, Oct 27-29.
2005. **B.S. Nayak**, A.D. Levine and V.J. Harwood. Investigating the role of archaeal and bacterial populations in the clogging of landfill leachate collection systems using laboratory-scale lysimeters. Southeastern Branch American Society for Microbiology, St. Pete Beach, FL, Oct 27-29.
2005. **L. A. Ball** and V.J. Harwood. Growth characteristics of environmental and clinical strains of *Enterococcus faecalis* in different media. Southeastern Branch American Society for Microbiology, St. Pete Beach, FL, Oct 27-29.
2005. V.J. Harwood, **L. Ball**, D.F. Moore and M.H. Zhouandai. Differential survival of *Enterococcus faecalis* strains in seawater: A case of adaptive trade-offs? International Water Association, Swansea, Wales (U.K.), Sept 4-8.
2005. **M. J. Brownell**, **M. J. Dontchev**, **S. D. Shehane**, T. M. Scott, J. Lukasik, R. C. Kurz and V. J. Harwood. Investigation of microbial fecal pollution of a pristine Florida beach by BOX-PCR of *Escherichia coli* and enterococci and PCR amplification of host-Specific markers. American Society for Microbiology General Meeting, June 5-9, Atlanta, GA.
2005. **M. J. Dontchev**, D. L. Wingfield, T. A. Cutting, P. T. Amuso, A. C. Cannons, and V. J. Harwood. Beach water quality and microbial source tracking library validation: consideration of *E. coli* population diversity. American Society for Microbiology General Meeting, June 5-9, Atlanta, GA.
2005. **K.V. Gordon** and V.J. Harwood. A SYBR green mediated real-time PCR assay differentiates *Vibrio vulnificus* strains based on virulence potential. American Society for Microbiology General Meeting, June 5-9, Atlanta, GA.
2005. **B. Nayak**, A.D. Levine and V.J. Harwood. Investigation of archaeal and bacterial community structure in landfill leachate lysimeters by denaturing gradient gel electrophoresis (DGGE). American Society for Microbiology General Meeting, June 5-9, Atlanta, GA.
2005. **S. D. Shehane**, R. M. Ulrich, T. Scott, V. J. Harwood. Microbial source determination in an anthropogenically impacted and an unimpacted Florida watershed utilizing host-

specific genetic markers. American Society for Microbiology General Meeting, June 5-9, Atlanta, GA.

2005. J. T. Lisle, **K. V. Gordon** and V. J. Harwood. *Vibrio spp.* within coral mucous provide protective activity against potential coral disease pathogens. American Society for Microbiology General Meeting, June 5-9, Atlanta, GA.

2005. V.J. Harwood, G. Huxel and F. Thomas. Public Health Indicators: Integration into the Tampa Bay Model. USGS Integrated Science Meeting. Feb 8-9, Gulfport, FL

INVITED SPEAKER (Since 2004)

2009. Beyond "Fecals:" Water Quality Assessment in the 21st Century. Florida Department of Health, Tampa FL April 1, 2009

2009. Year 1 of the Collaborative Gulf of Mexico Microbial Source Tracking Study (USF, USM, UWF). Gulf of Mexico Alliance Pathogen Workshop. St.Pete Beach, FL, Feb 11

2008. Microbial Source Tracking: The Science. U.S. Environmental Protection Agency Region IV, Atlanta, GA, September 18, 2008.

2008. Establishing Performance Criteria for Microbial Source Tracking Methods. American Society for Microbiology General Meeting, June 1-5, Boston, Mass.

2008. Microbial Source Tracking: TMDL and BMPAP Applications. Hampton Roads Sanitation District, Norfolk, VA, April 10.

2008. Microbial Source Tracking: Toolbox or Pandora's Box for Determining Sources of Fecal Pollution in Florida Waters? NSF-NIEHS Oceans & Human Health Center, University of Miami Rosenstiel School of Marine and Atmospheric Sciences, Miami FL Jan 18.

2007. Practical Strategies for Microbial Source Tracking. Florida Stormwater Association Fall Meeting, Dec 5-7, Orlando FL.

2007. Method Validation and Practical Strategies for Microbial Source Tracking. ASA-CSSA-SSSA International Meeting, New Orleans LA, Nov 5.

2007. Adventures in Microbial Source Tracking. Florida Environmental Health Association, Jacksonville, FL June 28.

2007. A Decade of Water Quality Research in Florida. Department of Biology, University of North Florida, Jacksonville FL. April 13.

2007. Microbial Source Tracking: Promise, Reality, and Potential. Cawthron Institute, Nelson, New Zealand March 15, 2007

2007. Validation of Performance in Library-Dependent Microbial Source Tracking Methods. USDA-CSREES National Water Conference, Savannah GA, Jan 28 – Feb 1.

2006. Selection Criteria and Field Validation for a Gulf of Mexico Microbial Source Tracking Study (with D. Stoeckel and S. Wang). USEPA Region IV MST Workshop, Biloxi, MS, Dec 6 – 8.

2006. The Case for *Helicobacter pylori* as a Waterborne Pathogen. Florida Section American Water Works Association Conference, Orlando FL, Nov 26-30. (Session Moderator)

- 2006. What's in Your Water? Pathogen Detection and Water Quality Monitoring for the 21st Century. **Keynote Speaker**, Virginia Water Science and Technology Symposium, Roanoke, VA Nov 1-3.
- 2006. State of the Science in Microbial Source Tracking. Florida Environmental Health Association, Sarasota, FL July 13.
- 2006. State of the Science in Microbial Source Tracking: What Environmental Managers and Public Health Practitioners Should Know. National Environmental Health Association, San Antonio, TX, June 27.
- 2005. Genetic Diversity and Virulence Potential of *Vibrio vulnificus*. Old Dominion University Dept. Biology, Norfolk, VA, Oct 7.
- 2005. Microbial Source Tracking in the Age of TMDLs. Florida Stormwater Association Annual Conference, Sanibel Island FL June 30 – July 1.
- 2005. Microbial Source Tracking. FDEP/FDOH Promoting Public Health through Safe Water Conference, Orlando, FL Jan 19-20.
- 2004. Sediments as a Source and Confounding Element in MST. USEPA Region IV Workshop, Biloxi, MS Nov 11-13
- 2004. Importance of and Approaches for Validating MST Results. USEPA Region IV Workshop, Biloxi, MS Nov 11-13 (with D.M. Stoeckel)
- 2004. Microorganisms: The Good, the Bad and the Ugly. Hillsborough County Lake, Pond and Stream Symposium. Tampa, FL, Oct 15.
- 2004. Microbial Source Tracking: Current and Prospective Approaches. Midwest Environmental Enforcement Association and Southern Environmental Enforcement Network, Memphis, TN April 27-29.
- 2004. Survival of Indicator Organisms in Water Column vs. Sediments: Implications for Sampling Strategies. Sustainable Beaches Summit, Destin, FL March 30-31.
- 2004. Implications of Microbial Diversity for Library-based Source Tracking Methodologies and Carbon Source Utilization as a MST Tool. International Workshop on Methods of Tracing Sources of Faecal Contamination in Bathing and Shellfish Waters. Guildford, England, Jan 12-13.

SCIENTIFIC SERVICE

- 2009 Water Environment Research Foundation Panel on Sources of Fecal Pollution in Inland Waters
- 2007 USEPA International Experts Meeting for Microbial Source Tracking July 9 – 11
- 2006 – Editorial Board: Applied and Environmental Microbiology
- 2004-2005 President, Southeastern Branch American Society for Microbiology
- 2004 Participation in workshops and lead writer on USEPA Guide Document for Microbial Source Tracking
- 2003 President-elect, Southeastern Branch American Society for Microbiology.

2002-2004. Policy Committee, Southeastern Branch American Society for Microbiology.

2001, 2002, 2004. Convener, Environmental Microbiology Session, Southeastern Branch American Society for Microbiology.

2001 – 2003 Pinellas County Water Technology Advisory Group

1996 - 2000 Guana, Talamato, Matanzas Shellfish and Water Quality Task Force

Ad Hoc Manuscript Reviews for: Applied and Environmental Microbiology, Letters in Applied Microbiology, Journal of Applied Microbiology, Environmental Science and Technology, Water Research, Journal of Environmental Quality, Journal of Virology, Environmental Microbiology

Grant reviews for: Australian Antarctic Program, South Africa Medical Research Council, U.S. Environmental Protection Agency, U.S. Department of Agriculture

SERVICE ON GRANT PANELS

2005 US Department of Agriculture Small Business Innovative Research (SBIR) **panel manager**

2004 US Department of Agriculture Small Business Innovative Research (SBIR)

2003 New York Sea Grant

2003 US Department of Agriculture Small Business Innovative Research (SBIR)

2002 Cooperative Institute for Coastal and Estuarine Environmental Technology (NOAA/UNH).

GRADUATE STUDENTS (completed degree)

2006 Miriam Brownell. Masters degree in Microbiology. Currently employed as Research Associate at USF Dept. Biology

2005 Vasanta Chivukula Ph.D. in Biology

2004 Robert Ulrich. Masters degree in Microbiology. Currently employed as Research Associate at USF Marine Science.

2003 Matthew Anderson. Masters degree in Microbiology. Currently employed University of MD Center of Marine Biotechnology.

2003 Kimberly L. Hood. Masters degree in Microbiology. Currently in Ph.D. program, University of Maryland (began Fall 2003).

2001 John M. Pisciotta Masters degree in Biology.
Ph.D. from Johns Hopkins University, Baltimore, MD.

2001 Michael Harris (co-Major Professor) Ph.D. in Chemistry.
Currently postdoctoral research associate at Los Alamos National Laboratories.

GRADUATE STUDENTS (CURRENT)

Valerie J. Harwood 05/26/09

	Degree	Year began
Michael Garman (co-chair w/ Jim Garey) (candidate)	Ph.D.	2001
Katrina Gordon	Ph.D.	2002
Bina Nayak	Ph.D.	2003
Brian Badgely	Ph.D.	2004
Asja Korajkic	Ph.D.	2005
Shannon McQuaig	Ph.D.	2005
Andrew "Ross" Myer	Ph.D.	2005
Phoebe Koch	Masters	2006
Chris Staley	Ph.D.	2007